CLAIMS

What is claimed is:

1. A power tool, comprising:

a working element for performing a task on a workpiece;

a light source arranged to project a beam of light adjacent the interface between the working element and the workpiece; and

a detector configured to detect the presence of a human body part in the beam of light,

wherein the detector is communicatively coupled to the power tool so as to stop operation of the working element, if a human body part is detected.

2. The power tool of claim 1, wherein the working element is at least one of a circular saw blade, a band saw blade, a drill bit, a cutter head, and a router bit.

3. The power tool of claim 1, wherein the light source is an infrared source, a near-infrared source, a combination near-infrared/infrared source, a visible light source, a combination near-infrared/visible source, an ultraviolet source, a combination ultraviolet/visible source, a coherent light source, or a far-infrared source.

4. The power tool of claim 1, further comprising a countermeasure device communicatively coupled to the detector, said countermeasure device being constructed for stopping the working element if a human body part is detected.

5. The power tool of claim 4, wherein the countermeasure device is a mechanical break, a sacrificial brake, an electric brake, or a removal device.

6. The power tool of claim 1, wherein the light source projects a zone generally about the working element.

7. The power tool of claim 1, further comprising an indicator configured to provide a visual indication of a detection zone.

8. A saw, comprising:

an arbor constructed for mounting a circular saw blade thereto;

a light source arranged so as to project a beam of light adjacent the circular saw blade; and

a detector configured to detect the presence of a human body part in the beam of light,

wherein the detector is communicatively coupled so as to stop the rotation of the circular saw blade, if a human body part is detected.

9. The saw of claim 8, wherein the light source is an infrared source, a near-infrared source, a combination near-infrared/infrared source, a visible light source, a combination near-infrared/visible source, an ultraviolet source, a combination ultraviolet/visible source, a coherent light source, or a far-infrared source.

10. The saw of claim 8, further comprising a countermeasure device communicatively coupled to the detector, said countermeasure device being constructed to prevent contact between the human body part and the circular saw blade if the saw is operating.

11. The saw of claim 10, wherein the countermeasure device is a mechanical break, a sacrificial brake, an electric motor brake, or a removal device.

12. The saw of claim 8, wherein the light source projects a beam of light defining a zone generally about the circular saw blade.

13. The saw of claim 8, wherein the projected light beam defines a point adjacent the circular saw blade.

14. The saw of claim 8, further comprising an indicator configured to provide a visual

indication of a detection zone.

15. The saw of claim 8, wherein the light source is a near-infrared light source.

16. The saw of claim 8, wherein the detector is a diffuse reflectance electro-optical detector.

17. The saw of claim 8, wherein the detector is configured to detect the presence of a human body part in at least two discrete locations with respect to the circular saw blade.

18. The saw of claim 8, wherein the detector is configured to initiate passive stopping of the circular saw blade at a remote position and active stopping of the circular saw blade at a proximal position, based on detection of a human body part, with respect to the circular saw blade.

19. The saw of claim 8, wherein the light source and the detector are automatically re-enabled when the saw is activated.

20. The saw of claim 8, wherein the detector is an Indium-Gallium-Arsenic based detector.

22. The saw of claim 8, wherein the light source and the detector are configured as a fiber optic probe.

23. A table saw, comprising:

a support surface for at least partially supporting a workpiece;

an arbor constructed for mounting a circular saw blade thereto, said arbor being configured so as to extend the circular saw blade through the support surface;

a light source arranged to project a beam of light adjacent the circular saw blade; and

an electro-optical detector configured to detect the presence of a human body part in the beam of light,

wherein the detector is communicatively coupled to the saw so as to stop the rotation of the circular saw blade, if a human body part is detected.

24. The table saw of claim 23, wherein the light source is an infrared source, a near-infrared source, a combination near-infrared/infrared source, a visible light source, a combination near-infrared/visible source, an ultraviolet source, a combination ultraviolet/visible source, a coherent light source, or a far-infrared source.

25. The table saw of claim 23, further comprising a countermeasure device communicatively coupled to the detector, said countermeasure device being constructed to prevent contact between the human body part and the circular saw blade if the saw is operating.

26. The table saw of claim 25, wherein the countermeasure device is a mechanical break, a sacrificial brake, an electric motor brake, or a removal device.

27. The table saw of claim 23, wherein the light source projects a beam of light defining a zone generally about the circular saw blade.

28. The table saw of claim 23, wherein the projected light beam defines a point adjacent the circular saw blade.

29. The table saw of claim 23, further comprising an indicator configured to provide a visual indication of a detection zone.

30. The table saw of claim 23, wherein the light source is a near-infrared light source.

31. The table saw of claim 23, wherein the electro-optical detector is a diffuse reflectance electro-optical detector.

32. The table saw of claim 23, wherein the detector is configured to detect the presence of a human body part in at least two discrete locations with respect to the circular saw blade.

33. The table saw of claim 23, wherein the electro-optical detector is configured to initiate passive stopping of the circular saw blade at a remote position and active stopping of the circular saw blade at a proximal position, based on detection of a human body part, with respect to the circular saw blade.

34. The table saw of claim 23, wherein the light source and the electro-optical detector are automatically re-enabled when the saw is activated.

35. The table saw of claim 23, wherein the electro-optical detector is an Indium-Gallium-Arsenic based detector.

36. The table saw of claim 23, wherein the light source and the electro-optical detector are configured as a fiber optic probe.

37. An optical proximity device for a saw, comprising:

a light source arranged to project a beam of light adjacent to a circular saw blade; and

an electro-optical detector configured to detect the presence of a human body part in the beam of light,

wherein the detector is communicatively coupled to the saw so as to stop the rotation of the circular saw blade, if a human body part is detected.

38. The optical proximity device of claim 37, wherein the light source is an infrared source, a near-infrared source, a combination near-infrared/infrared source, a visible light source, a combination near-infrared/visible source, an ultraviolet source, a combination ultraviolet/visible source, a coherent light source, or a far-infrared source.

39. The optical proximity device of claim 37, further comprising a countermeasure device communicatively coupled to the detector, said countermeasure device being constructed to prevent contact between the human body part and the circular saw blade during operation.

40. The optical proximity device of claim 39, wherein the countermeasure device is a mechanical break, a sacrificial brake, an electric motor brake, or a removal device.

41. The optical proximity device of claim 37, wherein the light source projects a beam of light defining a zone generally about the circular saw blade.

42. The optical proximity device of claim 37, further comprising an indicator configured to provide a visual indication of a detection zone.

43. The optical proximity device of claim 37, wherein the electro-optical detector is a diffuse reflectance detector.

44. The optical proximity device of claim 37, wherein the electro-optical detector is configured to initiate passive stopping of the circular saw blade at a remote position and active stopping of the circular saw blade at a proximal position, based on detection of a human body part, with respect to the circular saw blade.

45. The optical proximity device of claim 37, wherein the light source and the electro-optical detector are automatically re-enabled when the saw is activated.

46. The optical proximity device of claim 37, wherein the electro-optical detector is an Indium-Gallium-Arsenic based detector.

47. The optical proximity device of claim 37, wherein the light source and the electro-optical detector are configured as a fiber optic probe.

46. An optical proximity device for a saw, comprising:

means for detecting the presence of a human body part in the beam of light projected adjacent a saw blade; and

means for stopping operation of the saw blade, if a human body part is detected in the light beam.

47. The optical proximity device of claim 46, wherein the stopping means includes a countermeasure device constructed to prevent contact between the human body part and the saw blade during operation.

48. The optical proximity device of claim 47, wherein the countermeasure device is a mechanical break, a sacrificial brake, an electric motor brake, or a removal device.

49. The optical proximity device of claim 46, further comprising an indicator configured to provide a visual indication of a detection zone.

50. The optical proximity device of claim 46, wherein the detecting means is a diffuse reflectance detector.